c. Amendments to Claims

1. (Currently amended) An optical modulator, comprising:

an optical waveguide that includes a cladding layer and a core for carrying an optical carrier wave; and

a control waveguide for carrying a control wave, the waveguides being collinear and overlapping, the optical waveguide having a refractive index that is responsive to electric fields produced by the control wave that the control waveguide is adapted to carry; and

wherein the refractive index of the cladding layer at the control wave's wavelength~~,~~ is higher than the refractive index of the core at the optical carrier wave's wavelength.

2. (Currently amended) The optical modulator of claim 1, wherein a ratio of the effective refractive index ~~of the cladding layer at a~~ seen by the control ~~wave's wavelength~~ wave in dielectric of the modulator to the effective refractive index ~~of the core at~~ seen by the optical carrier ~~wave's wavelength~~ wave inside the modulator is in a range of about 1.2 to about 1.05

3. (Currently amended) The optical modulator of claim 1, wherein the refractive index of the core at a wavelength in the range of about 1.3 microns to about 1.7 microns is lower than the refractive index of the cladding layer ~~at a frequency~~ at one of a microwave's wavelength, a millimeter wave's wavelength, and a submillimeter wave's wavelength.

4. (Original) The optical modulator of claim 1, wherein the cladding layer includes an organic polymer.

5. (Original) The optical modulator of claim 4, wherein the polymer includes one of a polysilsesquioxane and P-O bonds.

6. (Original) The optical modulator of claim 4, wherein the core includes one of PMMA and a dye.

7. (Original) The optical modulator of claim 1, further comprising:

a Mach-Zehnder interferometer, the interferometer comprising:

the optical waveguide for carrying the first optical carrier wave; and

a second optical waveguide configured to transmit a second optical carrier wave that is mutually coherent with the first optical carrier wave.

8. (Currently amended) An optical modulator, comprising:

an optical waveguide that includes a cladding layer and a core for carrying an optical carrier wave; and

a control waveguide for carrying a control wave, the waveguides being collinear and overlapping, the optical waveguide having a refractive index responsive to electric fields produced by the control wave that the control waveguide is adapted to carry; and

wherein the refractive index of the core at the control wave's wavelength is lower than the refractive index of the cladding layer at the control wave's wavelength.

9. (Currently amended) The optical modulator of claim 8, wherein the refractive index of the cladding layer, at the control wave's wavelength, is higher than the refractive index of the core at, the optical carrier wave's wavelength.

10. (Original) The optical modulator of claim 8, wherein the refractive index of the core is lower than the refractive index in the cladding at one of a microwave's wavelength, a millimeter wave's wavelength, and a submillimeter wave's wavelength.

11. (Original) The optical modulator of claim 8, wherein the cladding layer includes an organic polymer.

12. (Original) The optical modulator of claim 11,

wherein the polymer includes one of a polysilsesquioxane and P-O bonds; and

wherein the core includes one of PMMA and a dye.

13. (Currently amended) An optical modulator, comprising:

an interferometer having two optical waveguides with associated cores, one of the cores having a refractive index that is responsive to applied electric fields;

a pair of electrodes extending parallel to the one of the cores;

a cladding disposed between the one of the cores and one of the electrodes; and

wherein the refractive index of the one of the cores at a wavelength between about 1.3 microns and about 1.7 microns is smaller than the refractive index of the cladding at one of a microwave's wavelength, a millimeter wave's wavelength, and a submillimeter wave's wavelength.

14. (Original) The optical modulator of claim 13, wherein a ratio of a refractive index of the cladding at one of a microwave's wavelength, a millimeter wave's wavelength, and a submillimeter wave's wavelength to a refractive index of the one of the cores at an optical carrier wave's wavelength is in the range of about 1.10 to about 1.15.

15. (Original) The optical modulator of claim 13, wherein at one of a microwave's wavelength, a millimeter wave's wavelength, and a submillimeter wave's wavelength, the ratio of the refractive index of the one of the cores to the refractive index of the cladding is less than one.

16. (Withdrawn) A method of electro-optically modulating an optical carrier wave with a control wave, comprising:

transmitting a sequence of wavefronts of the optical carrier wave to an optical waveguide, the optical carrier wave having a first wavelength; and

transmitting a control wave having a second wavelength to a control waveguide to electro-optically modulate velocities of the wavefronts in the optical waveguide, a dielectric cladding adjacent the optical waveguide having a refractive index at the second wavelength that is larger than the refractive index in the optical waveguide at the first wavelength.

17. (Withdrawn) The method of claim 16,

wherein the second wavelength is one of a microwave, a millimeter wave, and a submillimeter wave; and

wherein the first wavelength is in a range of about 1.3 microns to about 1.7 microns.

18. (Withdrawn) The method of claim 16,

wherein an intensity of an electric field produced by the control wave is higher in inside the optical waveguide than in the portion of the cladding located adjacent the optical waveguide.

19. (Withdrawn) The method of claim 16, further comprising:

interfering the sequence of wavefronts from the optical waveguide with a sequence of wavefronts from another optical carrier wave, the another optical carrier wave being coherent with the optical carrier wave transmitted to the optical waveguide.

20. (Withdrawn) The method of claim 16, further comprising:

transmitting the wavefronts with modulated propagation times from the optical waveguide to a distant external receiver.

21. (New) The optical modulator of claim 1, wherein the optical waveguide is a linear waveguide and the cladding layer is in contact with the core.

22. (New) The optical modulator of claim 1, further comprising a planar dielectric layer, the core being formed by a ridge in a planar layer.

23. (New) The optical modulator of claim 8, wherein the optical waveguide is a linear waveguide and the cladding layer is in contact with the core.

24. (New) The optical modulator of claim 8, further comprising a planar dielectric layer, the core being formed by a ridge in a planar layer.